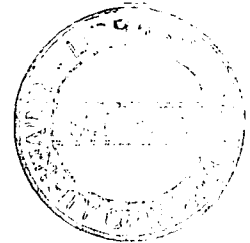


REAL TIME CHEQUE CLEARANCE SYSTEM FOR SRI LANKA

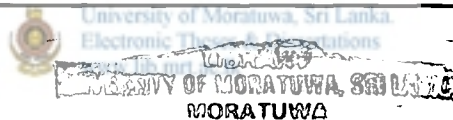
by

A. A. S. S. Amarasinghe



This research dissertation was submitted to the Department of Management of Technology of the University of Moratuwa in partial fulfillment of the requirements for the Degree of Master of Business Administration in Management of Technology.

Supervised by Dr. Ajith Pasqual



65804
333.717.117:004

Department of Management of Technology

University of Moratuwa – Sri Lanka

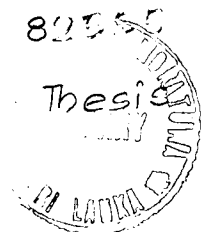
December 2004

University of Moratuwa



82555

82555



ACKNOWLEDGEMENT

This research dissertation was completed with the assistance, ideas and encouragement from a lot of people. All of them deserve a personal 'thank you' for all the help extended to me. However, I would like to devote special thanks to few important people who extended their support to make this thesis a reality. First of all, my supervisor for this research, Dr. Ajith Pasqual, for the encouragement, guidance and support extended to me throughout the research project also all the faculty members of the MBA in Management of Technology at The University of Moratuwa.

All my friends who participated in the pilot study and all those who participated in the research survey deserve a big 'thank you' from me.

Literature review was mainly conducted by Internet searches. I am grateful to all those who encourage sharing information and ideas through the Internet and those who have published valuable information in the Internet.

Finally, I must not forget my family. My wife and kids deserves appreciation for understanding, tolerating and encouraging me in completing this thesis successfully.

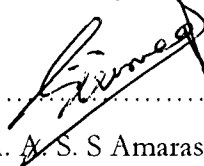


University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk



DECLARATION

"I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any University to the best of my knowledge and belief it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations"



.....
A. A. S. S. Amarasinghe

September 2004



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

To the best of my knowledge, the above particulars are correct.


.....
Dr. Ajith Pasqual – Supervisor
(13/1/2005)



ABSTRACT

At the beginning of the Banking Industry, in 18 century, cheques were get cleared by sending the cheques to the other bank through a person. With the time volume of cheque transactions & number of Bank branches increased and as a result cheque clearing became more complex & time consuming.

In 1950 central Bank was formed under the sec.98 of finance Act No.58 of 1948.

After forming the Central Bank it started acting as central clearing House.

With the increase in the volume of cheques and the computerization of banks the Central Bank of Sri Lanka decided to automate the cheque clearing system for speedier and accurate processing. To achieve this objective firstly Sri Lanka Automated Clearing House (SLACH) was established within the purview of the Information Technology Department of the Central Bank of Sri Lanka. SLACH commenced operation on 2nd March 1988. Secondly computerized “High Speed Document Processors” (Reader/Sorter equipment) were introduced and new cheques were introduced with MICR (Magnetic Ink Character Recognition) characters.

In year 2002 the Central Bank of Sri Lanka decided to hand over the activities of the SLACH to its users namely commercial banks operating in Sri Lanka. Accordingly, LankaClear (Pvt.) Ltd was incorporated under Companies Act and it took over the activities of Sri Lanka Automated Clearing House (SLACH) on 1st of April 2002.

After the divestment LankaClear was able to reduce the cheque processing time by 06 hours. As a result banks were able to reduce their cheque clearing realization time.

Even now cheques out side Grater Colombo Region takes relatively longer time to clear. I.e. T+2 or beyond (T = to day, T+1 = Tomorrow, T+2 = Day after tomorrow).

Major hurdle to achieve T+1 is due to the time taken by banks to complete all four legs of the cheque clearing process. In addition to the time taken for

clearance it make errors such as missing items, Free own items, Encoding errors etc & also high cost involvement in collecting, sorting & transporting.

This research is carried out to answer the research problem described above which will serve the purpose of enhancing the system to a real-time automated system which can be adopted in Sri Lanka. This is important because payment systems are vital for economic development and this is a change to prevailing payment mechanism but not a new system.

This research will use opinion poll based survey in order to collect primary data for the study. Questionnaires will be used to collect primary data from managers in the Information Technology field specially in the Banking industry. Further the Questionnaire will focus to gather the operation information & the procedures from the users of the current process.

After analyzing the data collected the researcher summarized the factors affecting for a Real-Time Cheque Clearance identified through Global Research findings and Survey results. Based on these factors a model for Real-Time Cheque Clearance will be presented.

Two models were developed in order to clear the cheque presented at the branch real-time. For such model the fundamentals requirements should be in place in order to implement such system, will be addressed finally.

TABLE OF CONTENTS

ACKNOWLEDGEMENT	I
DECLARATION	II
ABSTRACT	III
CHAPTER 1 – INTRODUCTION	1
BACKGROUND	1
RESEARCH TOPIC	3
PURPOSE OF THE STUDY	3
OBJECTIVES OF THE STUDY	4
SIGNIFICANCE OF THE STUDY	4
METHODOLOGY	8
SCOPE AND LIMITATIONS	10
CHAPTER FRAMEWORK	11
CHAPTER 2 – FRAMEWORK OF STUDY	13
INTRODUCTION	13
FUTHER DESCRIPTION OF THE RESEARCH PROBLEM	13
THE CONCEPTUAL MODEL	17
<i>Factors Identified Through Global Research Findings</i>	18
<i>Factors Identified Through Opinion Poll Research</i>	18
<i>Factors Identified Through Real Life Application</i>	18
<i>Methodology Used In Developing The Survey Questionnaire</i>	19
CHAPTER 3 – LITERATURE REVIEW	20
INTRODUCTION	20
CHEQUE IMAGE CLEARING	20
REAL TIME GROSS SETTLEMENT (RTGS) SYSTEM	26
SWIFT	26
IMAGE BASED CLEARING IN INDIA	27
BILLS OF EXCHANGE INTERPRETATION	28
<i>Instruction To Payer</i>	29
<i>Presentation Of The Cheque</i>	30
BANKING ACT, NO. 30 OF 1988	31
CHAPTER 4 – SURVEY DATA	33
INTRODUCTION	33
SURVEY AND RESULTS	33
ANALYSIS OF SURVEY RESULTS	34
<i>Operational Questionnaire</i>	34
<i>It Questionnaire</i>	38
CHAPTER 5 – FURTHER ANALYSIS OF SURVEY DATA	43

INTRODUCTION	43
DETAILS IN A CHEQUE	43
VALIDATION OF A CHEQUE	44
<i>Data Can Be Verified By Collecting Bank</i>	44
<i>Data Should Verify By Paying Bank</i>	44
REAL TIME GROSS SETTLEMENT	45
SETTLEMENT CLEARING SYSTEM	47
CHAPTER 6 – MODEL FOR REAL-TIME CHEQUE CLEARANCE	48
INTRODUCTION	48
MODEL FOR REAL-TIME CLEARANCE	48
DECENTRALISED MODEL	48
<i>Regional Configuration</i>	49
<i>Central Hub Configuration</i>	49
CENTRALISED MODEL	50
LANKACLEAR OPERATION	52
COLLECTING BANK OPERATION	53
PAYING BANK OPERATION	54
LANKACLEAR SYSTEM FEATURES	54
CHAPTER 7 – IMPLEMENTATION OF REAL-TIME SYSTEM	55
INTRODUCTION	55
SUCCESSFUL IMPLEMENTATION	55
<i>Legal Environment</i>	55
<i>Cheque Clearing Operation</i>	56
<i>Infrastructure</i>	57
<i>Social Background</i>	57
<i>System Security</i>	58
CHAPTER 8 – DISCUSSION, CONCLUSIONS AND FUTURE DIRECTIONS	59
INTRODUCTION	59
DISCUSSION	59
CONCLUSION	59
EVALUATION OF THE PROPOSED MODEL	63
<i>Process flow of current cheque clearance</i>	63
<i>Process flow of image clearance system</i>	65
<i>Process flow of proposed model</i>	66
<i>Benefits Of The Proposed Model</i>	67
FUTURE WORK	68
<i>Immediate attention</i>	69
DIRECTIONS FOR FUTURE RESEARCH	69
REFERENCES	71

ANNEXTURE I – OPERATIONAL QUESTIONNAIRE	72
ANNEXTURE II – IT QUESTIONNAIRE	75



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk



LIST OF FIGURES

Number	Page
FIGURE 1: CHEQUE VOLUME GROWTH	5
FIGURE 2: CHEQUE AMOUNT GROWTH	6
FIGURE 3: CURRENT CHEQUE CLEARING SYSTEM	8
FIGURE 4: RESEARCH APPROACH	10
FIGURE 5: RESEARCH METHODOLOGY	17
FIGURE 6: MODEL USED IN PREPARING THE QUESTIONNAIRE	19
FIGURE 7: FRONT SIDE OF THE NEW IMAGE FRIENDLY CHEQUE	22
FIGURE 8: BACK SIDE OF THE NEW IMAGE FRIENDLY CHEQUE	23
FIGURE 9: REGIONAL CENTRES	24
FIGURE 10: IMAGE BASED CLEARING IN FROM NCR CORPORATION	27
FIGURE 11: RESPOND TO THE IMAGE CLEARING SYSTEM	37
FIGURE 12: RESPOND TO REAL-TIME CLEARANCE	37
FIGURE 13: RESPOND ON CHEQUE CLEARANEC AUTOMATION	39
FIGURE 14: VIEW ON SIGNATURE VERIFICATION SYSTEM	40
FIGURE 15: VIEW ON VISA OR MASTER USAGE FOR CHEQUE CLEARANCE....	40
FIGURE 16: RESPOND TO PRACTICABILITY OF REAL-TIME CLEARANCE	41
FIGURE 17: VEIWS ON DIFFICULTIES WITH REAL-TIME CLEARANCE	41
FIGURE 18: MICR LINE DETAILS IN A CHEQUE	43
FIGURE 19: RTGS CONFIGURATION	46
FIGURE 20: REGIONAL CONGIGURATION	49
FIGURE 21: CENTRAL HUB CONFIGURATION	50
FIGURE 22: BRANCHES CONFIGURATION	51
FIGURE 23: OVERALL CONFIGURATION	52
FIGURE 24: LANKACLEAR CONFIGURATION	53
FIGURE 25: LANKA CLEAR SYSTEM CONFIGURATION WITH SECURITY	60
FIGURE 26: BANK SYSTEM CONFIGURATION WITH SECURITY MEASURES .	61
FIGURE 27: OVERALL CONFIGURATION WITH SECURITY MEASURES	62

LIST OF TABLES

<u>Number</u>	<u>Page</u>
TABLE 1: CHEQUE REALIZATION TIME SCHEDULE	14
TABLE 2: IMAGE CLEARANCE CHARGES SCHEDULE	24
TABLE 3: OPERATIONAL DATA OF THE SAMPLE	34



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk